

REMARKS/ARGUMENTS

Claims 1-40 were originally pending. Claims 14-28, 30, and 33-35 have been allowed. Claims 4, 11, 15, 20, 23, 24, 26, 32, and 34 have been amended to more particularly point out the subject matter of the invention. Claims 29-31 have been cancelled as substantial duplicates of allowed claims 33-35. No claims have been added. Accordingly, claims 1-28, and 32-40 remain pending

In view of the following remarks/arguments, withdrawal of the objections to the drawings and the objections and rejections to the pending claims is respectfully requested.

Drawing Objections

The drawings stand objected to as failing to comply with 37 CFR 1.84(p) as not including a reference sign in the description of Fig. 2. In particular, the August 05, 2003 Office action ("ACTION") points out that on page 13, line 5, the phrase "initialization phase 100" does not match any feature on Fig. 2. To address this objection, the specification, at page 13, line 5 has been amended to match the reference numbering of Fig. 2. More specifically, the phrase has been amended to recite "initialization phase 200".

In view of this amendment to the specification, withdrawal of the objection to the drawings is respectfully requested.

Specification Amendments

The specification has been amended, as indicated above, to correct grammatical errors and to overcome the objection to the drawings under 37 CFR 1.84(p).

Claim Objections

Claims 29 and 32 stand objected to because of the following informalities: insert "of" after "set" in line 8 of claim 29, and delete "," in line 10 of claim 32. Claim 29 has been canceled. Claim 32 has been amended as indicated. In view of these amendments, withdrawal of the rejection to claim 32 is respectfully requested.

Claims 2-3, 5, 9-10, 12, 32, and 38-39 stand objected to as depending upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 32 depends from an allowed base claim 28. By virtue of this dependency, claim 32 is also allowable over the cited references. For this reasons, withdrawal of the objection to claim 32 is respectfully requested.

In addressing **claims 2-3, 5, 9-10, 12, and 38-39**, the ACTION at page 6 concedes that "[t]he prior art does not teach or suggest, alone or in combination a method providing an extended configuration descriptor in firmware of the USB device including a set of non-standard class codes, including class codes or subclass codes that are not defined by the USB DWG. It is not found a method including a 'GET_DESCRIPTOR' device request that specifies a predetermined index and receiving in response, an extended configuration descriptor that

corresponds in the USB device specifying a nonstandard class code. The computer-readable media corresponding to the cited method are not found in the prior art. Furthermore, the prior art does not teach or suggest a USB device including a processor, port, memory, control program module, and extended configuration descriptor, which includes information that identifies a set of non-standard compatible IDs (class codes and/or subclass codes not defined by the USB DWG) corresponding to the USB device.”

With respect to claims 2-3, 5, 9-10, 12, and 38-39, Applicant chooses not to amend these claims to include all limitations of the base claim and any intervening claims. This is because it is respectfully submitted that the base claims and intervening claims of claims 2-3, 5, 9-10, 12, and 38-39 are also patentably distinguished over the cited references for the reasons provided below.

Claim Rejections Under 35 USC §103(a)

Claims 1, 4, 6-8, 11 and 13 stand rejected under 35 USC §103(a) as being unpatentable over U.S. Patent no. 6,591,310 B1 to Johnson in view of U.S. Patent no. 6,260,084 B1 to Wilson et al (“Wilson”). These rejections are traversed.

Claim 1 recites “providing an extended configuration descriptor in firmware of a USB device, the extended configuration descriptor comprising a set of non-standard class codes”, and “responsive to receiving a host-specific device request, communicating the extended configuration descriptor to a requestor.” Nowhere do the references of record teach or suggest these features.

In addressing claim 1, the ACTION at page 3, concedes that Johnson does not teach or suggest “a set of non-standard class codes”. To provide this missing feature, the ACTION relies on Wilson’s teaching of USB class definition to

conclude that claim 1 is unpatentable in view of the cited combination. This conclusion is unsupportable.

Johnson, at col. 5, lines 13-17, describes request and reply communications (I/O) between computing devices over an I/O passing medium. To this end, Johnson describes, at col. 6, lines 1-4, that “the invention includes a *reply descriptor* for transmission over an I/O passing medium in response to a corresponding request message.” (Emphasis added). Johnson, at col. 13, line 15, indicates that such I/O may performed via a Universal Serial Bus (USB). Johnson teaches at col. 5, lines 37-42, that “a reply descriptor can be generated and then transmitted for a corresponding request for any *class of messages*.” (Emphasis added).

This description of Johnson does not teach or suggest the claimed “extended configuration descriptor in firmware of a USB device”. The specification, at page 8, lines 17-20, recites that an “extended configuration descriptor comprises a set of non-standard class codes that can be used by a host operating system to identify one or more device drivers to control the device.” The specification, at page 8, lines 17-20, recites that an “extended configuration descriptor [as claimed] comprises a set of non-standard class codes that can be used by a host operating system to identify one or more device drivers to control the device.” As the ACTION admits, Johnson does not teach or suggest such “non-standard class codes”.

Additionally, it is well known that firmware is software (programs or data) that has been written onto read-only memory (ROM). For these reasons, Johnson does not teach or suggest such an “extended configuration descriptor in firmware of a USB device”, as claim 1 recites.

Moreover, it is a fundamental principal of patent law that piecemeal reconstruction of prior art patents in light of Applicant's disclosure is not a basis for a holding of obviousness under 35 USC §103. At page 3 ACTION asserts, "Johnson teaches a descriptor for *any class* (see col. 5, lines 36-40) and associated *code* (see col. 5, line 42". (Emphasis added). It is respectfully submitted that these are snippets (a phrase and a term) of Johnson extracted outside of the context of Johnson's teachings. For instance, Johnson at col. 5, lines 37-42 describes that the reply descriptor may correspond to "any class *of messages*", not just "any class and associated code", as the ACTION asserts. A class of messages clearly does not teach or suggest of "the extended configuration descriptor comprising a set of non-standard class codes." Moreover, col. 5, line 42 of Johnson recites "*program code*", not just "any class and associated code" as the ACTION asserts. This is further evidenced at col. 6, lines 18-22, wherein Johnson describes that "program code" is computer program executable code for generating a reply message. Accordingly, the extracted snippets of Johnson do not teach or suggest "the extended configuration descriptor comprising a set of non-standard class codes, as claim 1 recites.

Wilson is secondarily relied on for the teaching of "class definition of USB communications". Wilson, at col. 1, lines 34-36, teaches "modem communications between a host and a telephone system. A modem with both RS-232 interface and a USB interface connects to the host." At col. 4, lines 1-18, Wilson teaches that "[i]f the selected data path is through the serial link 22 and USB interface 12, then the model operates as a USB compliant device. [...] Communications with the host are performed pursuant to the USB specification. [...] USB specification defined requests include standard and communication class

requests.” In light of this teaching, a system of Wilson may never operate as a USB compliant device and “providing an extended configuration descriptor in firmware of a USB device”, as claim 1 recites, wherein “the extended configuration descriptor comprising a set of non-standard class codes”.

Moreover, nowhere does Wilson teach or suggest that such “an extended configuration descriptor” is stored “in firmware of a USB device”, as Applicant claims.

For each of the above reasons, the features of claim 1 are patentably distinguished over Johnson’s teaching of a request and reply communications (I/O) between computing devices over an I/O passing medium in view of Wilson’s modem communications between a host and a telephone system. Accordingly, the 35 USC §103 rejection of claim 1 over Johnson in view of Wilson is improper and should be withdrawn.

Claims 4 and 6 depend from claim 1 and are allowable over the cited combination by virtue of this dependency. For this reason alone, the 35 USC §103 rejection of claims 4 and 6 over Johnson in view of Wilson is improper and should be withdrawn.

Additionally, claims 4 and 6 recite additional features that are not taught or suggested by the references of record. For instance, claim 4 recites “wherein the extended configuration descriptor further comprises a control function section indicating information corresponding to a function for the USB device.” For the reasons already discussed, the cited combination does not teach or suggest “the extended configuration descriptor” so the cited combination cannot teach or suggest such “a control function section”, as Applicant claims.

For this additional reason, the 35 USC §103 rejection of claim 4 should be withdrawn.

Claim 7 recites “querying a USB device using a host-specific device request to obtain a descriptor indicating a set of non-standard class codes”, “determining one or more compatible device drivers based on the set of codes indicated by the descriptor”, and “loading the one or more compatible device drivers to control the USB device.” For the reasons already discussed, the references of record do not cited combination does not teach or suggest these features of claim 7, and for these reasons alone, the 35 USC §103 rejection of claim 7 is improper and should be withdrawn.

Moreover, claim 7 recites “determining one or more compatible device drivers based on the set of codes indicated by the descriptor.” In addressing this feature, the ACTION points to Johnson, col. 13, lines 37-39, 50-51, and 60-64. However, these portions of Johnson merely teach that use of the reply descriptor and message flow can be flexible. By way of example, Johnson then describes intercommunication between two host drivers “in the form of request and rely descriptors as well as request and reply messages”. Nowhere does this teach or suggest “determining one or more compatible device drivers based on the set of codes indicated by the descriptor”, as claim 7 recites. Furthermore, Wilson is completely silent on such claimed features.

For this additional reason, the 35 USC §103 rejection of claim 7 over the cited combination is improper and should be withdrawn.

Claims 8, 11, and 13 depend from claim 7 and are allowable over the cited combination by virtue of this dependency. Accordingly, the 35 USC §103 rejections of claims 8, 11, and 13 should be withdrawn.

Additionally, claims 8, 11, and 13 include additional features that are not taught or suggested by the cited combination. For instance, claim 11 recites “a control function section indicating information corresponding to a function for the USB device.” In addressing this feature, the ACTION points to the teachings of Johnson at col. 19, lines 1-10 to assert that this feature is inherent. In support of this assertion, the ACTION points to the teaching of col. 13, lines 15-17, and col. 19, line 18. It is respectfully submitted that these teachings do not indicate that the claimed feature is necessarily inherent in the reply descriptor of Johnson.

Inherency cannot be predicated on what is unknown and cannot be established by probabilities or possibilities that the reply descriptor may have a “control function section” as claim 11 recites. Johnson, at col. 19, lines 1-10 recites “[a] reply descriptor for transmission over an I/O message passing medium in response to a corresponding request message, comprising: at least one indication field that identifies type of the reply descriptor, and a content field”, and “whereby a reply message is generated only if at least one predefined condition is not met and said content field comprises information of said reply message’s storage location, if so generated.” Nowhere does this recited passage teach or suggest that the “control function section” of claim 11 is necessarily inherent. Adding the teaching of col. 13 lines 15-17, Johnson recites “USB (Universal Serial Bus—used for low speed for referrals such as a keyboard, mouse, joystick, scanner, printer and telephony devices)”. Further, adding the teaching of col. 19, line 18, which recites a “USB (Universal Serial Bus), RS 232” does not add anything extra to this teaching other than RS-232.

These cited passages of Johnson teach a reply descriptor—a reply descriptor that may be communicated over a USB or over RS-232 to a keyboard, mouse,

joystick, scanner, printer and telephony device. This clearly does not indicate that the reply descriptor necessarily includes the “control function section” of the claimed “extended configuration descriptor”. Thus, the recited features of claim 11 are not necessarily inherent in the teachings of Johnson. Moreover, nowhere does Wilson teach or suggest such a feature.

For this additional reason, the 35 USC §103 rejection of claim 11 over the cited combination is improper and should be withdrawn.

Claims 36-37 and 40 stand rejected under 35 USC §103(a) as being unpatentable over U.S. Patent no. 6,219,736 to Klingman. These rejections are traversed.

Claim 36 recites “a first data field comprising data indicating a count indicating the number of USB control functions for which mappings exist in a descriptor”, and “one or more second data fields, the number of second data fields based on the count, each second data field comprising data corresponding to a single function for a USB device.” Klingman does not teach or suggest these recited features.

The ACTION relies on Klingman col. 2, line 58, and col. 13, lines 43-46, lines 9-11 and 57-62, to teach “a first data field comprising data indicating a count indicating the number of USB control functions for which mappings exist in a descriptor”, as claim 36 recites. However, col. 2, lines 56-59 merely recite “[t]he endpoints are communicated to the USB controller during the configuration process using descriptors, which are data structures with a defined format.” Klingman at col. 13, lines 43-46 describes “[e]ach endpoint is communicated from the USB host to the USB RAM device 130 using descriptors, the field of the

descriptor is used to select the appropriate endpoint register within the endpoint register file 198.” Moreover, col. 13, lines 9-11 and 57-62 merely respectively describe “the programmability of the *counters* associated with the endpoints” and “[a] byte counter 256 [...] within the byte counter field of each of the endpoint registers 259”. Nowhere do these teachings teach or suggest “a first data field comprising data indicating a count indicating the number of USB control functions for which mappings exist in a descriptor”, as claim 36 recites.

For this reason alone, the 35 USC §103 rejection of claim 36 over Klingman is improper and should be withdrawn.

The ACTION further points to Klingman col. 11, lines 49, 50, 52, 59, and col. 18, lines 28-31 to conclude that the claimed “mappings” is inherent in the teachings of Klingman. This conclusion is unsupportable. Klingman at col. 11, lines 48-54 recite “[t]he dual port RAM device 214 is a sophisticated storage device having an associated memory map is particularly suited for USB applications. The memory map associated with the dual port RAM device 214 includes the request storage location 142 [...]” Additionally, Klingman at col. 18, lines 28-31, merely recites the “a memory map 300, which is the default memory map (or organization) of information stored in the dual port RAM device 214.” Thus, the memory map of Klingman describes memory organization, not “USB control functions for which mappings exist in a descriptor” as claims 36 recites. For these reasons, the claimed features “for which mappings exist in a descriptor” are not necessarily inherent in Klingman’s memory map.

For this additional reason, the 35 USC §103 rejection of claim 36 over Klingman should be withdrawn.

Claims 37 and 40 depend from claim 36 and are allowable over the cited combination by virtue of this dependency. For this reasons alone, the 35 USC §103 rejection of claims 37 and 40 should be withdrawn.

Moreover, claims 37 and 40 include additional features that are patentably distinguishable from Klingman. For instance, claim 40 recites “a control function length indication”, “a total number of interfaces indication, the total number of interfaces being grouped together to generate a control function”, and “an interface number.” In addressing this claim the ACTION admits that Klingman does not teach or suggest the claimed “total number of interfaces indication, the total number of interfaces being grouped together to generate a control function”. Instead, the Examiner modifies Klingman in view of what is seemingly personal knowledge [no other reference is cited] to conclude that the features of claim 40 are not patentably distinguished from the combination. This conclusion is unsupportable.

At col. 4, lines 59-66, Klingman describes an “INTERFACE” descriptor. Klingman teaches that this INTERFACE descriptor is “used to report attributes to the USB client software”. The INTERFACE descriptor “is requested via SETUP transactions in which the desired descriptor type is requested from the microcomputer.” At line 46, Klingman describes that a SETUP token begins a CONTROL transfer. At col. 2, lines 40-42, Klingman teaches that a CONTROL transfer is “[u]seful for sending specific requests from the host system to USB devices.” Thus, Klingman teaches that a SETUP token must be used to send a request for an INTERFACE descriptor to a USB device—the INTERFACE descriptor can be used “to report attributes to the USB client software”.

In light of this, Klingman is completely silent with respect to any teaching or suggestion of “a total number of interfaces indication, the total number of interfaces being grouped together to generate a control function”, as claim 40 recites. The specification, at page 19, lines 6-16, clearly recites “[e]ach instance of a control function 406 encapsulates information corresponding to a single function for the peripheral device”, wherein more than a single interface may “be grouped together to generate this function”. Since Klingman does not discuss combining multiple interfaces to generate a single control function, it is likely that Klingman will never utilize “a total number of interfaces indication, the total number of interfaces being grouped together to generate a control function”, as Applicant claims. For each of these reasons, the features of claim 40 would not have been obvious for a person of ordinary skill in the art at the time the invention was made over Klingman in view of the Examiner’s personal knowledge.

Accordingly, for this additional reason, the 35 USC §103 rejection of claim 40 should be withdrawn.

As an additional matter, “[w]hen a rejection in an application is based on facts within the personal knowledge of an employee of the office, the data shall be as specific as possible, and the reference must be supported, when called for by the applicant, by the affidavit of such employee, and such affidavit shall be subject to contradiction or explanation by the affidavits of the applicant and other persons.” 37 CFR §1.104(d)(2).

If this rejection is maintained on a similar basis in a subsequent action, it is respectfully requested for the Office specifically show where Klingman teaches a control function comprising multiple interfaces, “the total number of interfaces being grouped together to generate a control function”, as claim 40 recites. In lieu

of the ability of the Office to provide such evidence, it is respectfully requested for the Examiner to supply an affidavit to support this modification to Klingman.

Conclusion

Applicant thanks the Office for allowance of claims 14-28 and 33-35. The remaining claims 1-13, 32, and 36-40 are also in condition for allowance and action to that end is respectfully requested. Should any issue remain that prevents allowance of the application, the Office is encouraged to contact the undersigned prior or issuance of a subsequent Office Action.

Respectfully Submitted,

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